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Attorney Docket No. P23561

In re application of: Masami SHIRAI et al.

Application No. : 10/619,499

Filed : July 16, 2003

For : OBSERVATION OPTICAL DEVICE

Mail Stop Appeal Brief-Patents
 Group Art Unit : 2872

Examiner : Joshua L. Pritchett

Mail Stop Appeal Brief-Patents

Commissioner for Patents
 U.S. Patent and Trademark Office
 Customer Service Window, Mail Stop Appeal Brief-Patents
 Randolph Building
 401 Dulany Street
 Alexandria, VA 22314

Sir:

Transmitted herewith is an **Appeal Brief under 37 C.F.R. §41.37** in the above-captioned application.

☐ Small Entity Status of this application under 37 C.F.R. 1.9 and 1.27 has been established by a previously filed statement.

☒ Attachments: Claims Appendix; Evidence Appendix; Related Proceeding Appendix; Attachment 1.

☐ A Request for Extension of Time.

☐ No additional fee is required.

The fee has been calculated as shown below:

Claims After Amendment	No. Claims Previously Paid For	Present Extra	Small Entity		Other Than A Small Entity	
			Rate	Fee	Rate	Fee
Total Claims: 8	20	0	x25=	\$	x 50=	\$ 0.00
Indep. Claims: 1	3	0	x100=	\$	x200=	\$ 0.00
Multiple Dependent Claims Presented			+180=	\$	+360=	\$ 0.00
Extension Fees for ___ Month(s)				\$		\$ 0.00
Appeal Brief Filing Fee						\$500.00
Total:				\$	Total:	\$500.00

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☐ Please charge my Deposit Account No. 19-0089 in the amount of \$ ____.

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☒ Any additional filing fees required under 37 C.F.R. 1.16.

☒ Any patent application processing fees under 37 C.F.R. 1.17, including any required extension of time fees in any concurrent or future reply requiring a petition for extension of time for its timely submission (37 C.F.R. 1.136(a)(3)).

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s) : Masami SHIRAI et al.

Appln. No. : 10/619,499

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APPEAL BRIEF UNDER 37 C.F.R. § 41.37

Commissioner for Patents
U.S. Patent and Trademark Office
Customer Service Window, Mail Stop Appeal Brief- Patents
Randolph Building
401 Dulany Street
Alexandria, VA 22314

Sir:

This Appeal is from the Examiner's Final Official Action of February 28, 2006, in which the Examiner rejected claims 1-8 under 35 U.S.C. § 112, first paragraph, and rejected claims 1-8, as set forth in the Final Official Action of February 28, 2006.

No amendments have been filed subsequent to the final rejection of the above-noted claims.

The requisite fee under 37 C.F.R. § 41.20(b)(2) in the amount of \$ 500.00 for the filing of the Appeal Brief, is being paid by check, submitted herewith. However, if for any reason the necessary fee is not associated with this file, the Commissioner is authorized to charge the fee for the Appeal Brief and any necessary extension of time fees to Deposit Account No. 19-0089.

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REAL PARTY IN INTEREST

The real party in interest is PENTAX Corporation, by virtue of an assignment recorded in the U.S. Patent and Trademark Office on July 16, 2003, at Reel 014298 and Frame 0486.

II. RELATED APPEALS AND INTERFERENCES

NONE - No related appeals and/or interferences are pending.

III. STATUS OF THE CLAIMS

Claims 1-8 stand finally rejected and are the subject of this Appeal. Claims 1-8 remain pending in the present application.

IV. STATUS OF THE AMENDMENTS

As noted *supra*, no amendments have been filed subsequent to the final rejection of February 28, 2006.

V. SUMMARY OF THE CLAIMED SUBJECT MATTER

As described in Applicants' specification beginning, *inter alia*, page 1, line 14, and also as further described in Applicants' Response filed on June 17, 2005 (all arguments made therein, as well as those made in Applicants' other amendments, being expressly incorporated herein), known observation optical systems that include a mechanically-linked photographing optical system, such as the applied YAMAZAKI reference (U.S. Patent No. 4,067,027, hereinafter "YAMAZAKI"), there is a possibility of the photographing optical system being out of focus when the focusing system is adjusted by the user, even though it appears to the user that the object is in focus, since the diopter adjustment may erroneously influence the amount of focus adjustment provided by the user.

In an effort to address this potential problem in the prior art, Applicants endeavored to provide a system wherein focusing error of the photographing optical system is substantially reduced or eliminated by compensating for this potential error caused by eyepiece diopter adjustment, such that, when an image observed through the observation optical system is focused, the image obtained by the photographic optical system is also focused. As described beginning on pages 35, line 4 of the present specification, the Applicants conducted a focusing test to determine where an observer's eyes focus in comparison to the in-focus position of the test binoculars, and it was unexpectedly determined that the "observer's eyes focus on the object image at a position slightly offset from the in-focus position." Fig. 12 of the present application shows the measurement results of this focusing test, which allowed the inventors to obtain the arithmetic mean of the measured dioptric differences. Taking this mean into

consideration, the inventors were able to modify (as a non-limiting example) a cam groove 75 (shown in Fig. 13), which results in a measured dioptric power difference between a first dioptric power of a combination of an eye of the user and an ocular lens system of the observation optical system, and a second dioptric power of a combination of the eye and the ocular lens system and an objective lens system of the observation optical system, being cancelled, in contrast to the cam groove of Fig. 9, which does not take these measured dioptric differences into account.¹ Thus, a feature of the present invention provides that when an image observed through the observation optical system is focused on a plane that is at the rear side (*i.e.*, eye-side) of the reticle, the image obtained by the photographic optical system is focused.

In particular, the following descriptions are made with respect to the independent claim and include references to particular parts of the specification. As such, the following are merely exemplary and are not a surrender of other aspects of the present invention that are also enabled by the present specification and that are directed to equivalent structures or methods.

Independent claim 1 is directed to an observation optical device with a photographing function, having an observation optical system 12R, 12L (page 12, line 23 – page 13, line 2) and a photographing optical system 68 (page 21, lines 21-22), the observation optical system being utilized as a focusing device for the photographing optical system (page 29, lines 19-23), the observation optical device includes a first focusing mechanism that focuses the observation optical system so as to observe a close-range view through the observation optical system (page 29, lines 19-23), and a

¹ As noted in the specification at page 37, lines 9-11, the broken line of the helicoid cam groove 75 shown in Fig. 13 corresponds to that shown in Fig. 9.

second focusing mechanism that focuses the photographing optical system so as to photograph a close-range view through the photographing optical system (page 27, lines 1-11). The observation optical device also includes an association mechanism 57 that associates the first and second focusing mechanisms with each other in such a manner that the observation optical system and the photographing optical system are always kept in a focused state (page 23, line 3- page 25, line 4; page 27, line 12 – page 28, line 4), and a reticle 78R provided in the observation optical system for focusing the observation optical system with a predetermined dioptric power during an operation of the association mechanism (page 33, lines 18-24).

The second focusing mechanism is constructed in such a manner that, when an object contained in the close-range view is observed, the photographing optical system is positioned at an object side, in relation to a theoretical position determined when the photographing optical system focuses on an object, when the observation optical system focuses on the object (page 37, lines 12-20). Further, a measured dioptric power difference between a first dioptric power of a combination of an eye of the user and an ocular lens system of the observation optical system, focusing on the reticle, and a second dioptric power of a combination of the eye and the ocular lens system and an objective lens system of the observation optical system, focusing on an object to be observed, is cancelled (page 36, line 22 – page 37, line 11). The theoretical position is defined as a position of the photographic optical system such that, when an image observed through the observation optical system is focused on the reticle, the image obtained by the photographic optical system is also focused (page 36, line 22 – page 37, line 20).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

(A) Whether claims 1-8 are properly rejected under 35 U.S.C. §112, first paragraph as failing to comply with the written description requirement.

(B) Whether claims 1-8 are properly rejected under 35 U.S.C. § 103(a) as being unpatentable over YAMAZAKI in view of KOBAYASHI (JP 10-239735, hereinafter "KOBAYASHI").

VII. ARGUMENT

(A) The rejection of claims 1-8 under 35 U.S.C. § 112, first paragraph as failing to comply with the written description requirement, the decision to reject these claims on this ground should be reversed, and the application should be remanded to the Examiner for allowance.

Independent Claim 1

In the outstanding rejection, the Examiner has maintained that the added limitations defining the theoretical position is not present in the specification, claim language or drawings as originally filed. Specifically, the Examiner found that these limitations “have language relating to the position of optical elements when focusing light; however the drawings and the specification never show any relation between the theoretical position and the focusing of light on certain elements. The only reference to the theoretical position is on page 37, which says that the theoretical position is determined by the cam groove shown in Fig. 9. Fig. 9 shows nothing about how light is focused within the optical system.”

In the “Response to Arguments” section of the outstanding Final Official Action, the Examiner asserts that he “cannot determine how one of ordinary skill in the art would interpret the theoretical position being determined by the cam groove 75 of Fig. 13 as including all of the above quoted limitations.”

Applicants respectfully traverse this rejection, and again assert that Fig. 9, together with the written description and the other figures, clearly shows the theoretical position as recited in the claims, in such a way as to reasonably convey to one skilled in the art that Applicants had possession of the claimed invention.

Specifically, Applicants note that the specification (at, e.g., page 28, line 12 – page 30, line 18) sufficiently describes the structure of the cam grooves of Fig. 9 in

relation to the focusing of the photographing optical system and observation optical system so that one skilled in the art would understand the theoretical position as defined in the claims. The arrangement of the photographing and observation lenses (each of which focus light) are also shown in, e.g., Figs. 1, 3 and 8, and such is described in the specification at, *inter alia*, page 27, line 7 – page 28, line 4. Further, page 29, line 4 – page 30, line 2, describes the helicoid cam grooves of Fig. 9 and how they associate movement between the pair of telescopic optical systems 12R and 12L and the photographing optical system 68, and further describes that the focal length of the photographing optical system 69 is adjusted due to the configuration of the cam grooves 64, 75, it is thus readily apparent to those skilled in the art that the modification of the cam grooves (shown in Fig. 13) would alter the relative position along the optical axis of the photographing lenses. Applicants submit that it is thus unnecessary to show the “focusing of light” in the figures to define the theoretical position of claim 1.

Nevertheless, to further the Examiner’s understanding that one skilled in the art would understand the theoretical position as defined in the claims, in the Amendment and Response of January 20, 2006, Applicants submitted Attachment 1 (showing Figs. A, B and C). For the convenience of the Board, another copy of this Attachment 1 is submitted herewith. While the Examiner, in the “Response to Arguments” section of the outstanding Final Official Action, asserts that the Applicants are using the figures of this Attachment 1 that are “not part of the original disclosure to explain how the claimed limitations function.” To the contrary (and as noted by Applicants on page 8 of the Amendment filed on January 20, 2006), Applicants are merely using the figures of Attachment 1 “to further the Examiner’s understanding that one skilled in the art would

understand the theoretical position as defined in the claims," since it is presumed that patent examiners are not skilled in the relevant art.

In this regard, in Fig. A, the theoretical position is shown. In other words, the image observed through the observation optical system (the upper optical system in Fig. A) is focused on the reticle, and the image obtained by the photographic optical system (the upper optical system in Fig. A) is also focused on the CCD. It is noted that the cam groove 75 of Fig. 9 is shown in Fig. A.

Fig. B shows the image observed through the observation optical system focused on a plane that is at the rear side (*i.e.*, toward the image side) of the reticle, and the image obtained by the photographic optical system is focused on the rear side of (*i.e.*, beyond) the CCD, and is out of focus. A clear image thus cannot be obtained. For example, at close range, when a user focuses the image using a device having the cam groove 75 of Fig. 9 (*i.e.*, the device of Figs. A and B), the photographing optical system will be out of focus (*i.e.*, there will be an amount of defocus), while the image viewed through the observation optical system by the user will appear to be in focus to the user (due in part to the phenomenon of "instrument myopia," described in Applicant's specification at *inter alia*, beginning page 4, line 15). Thus, the image viewed through the observation optical system will be focused on a plane that is toward the image side of the reticle (*i.e.*, to the right side when viewing Fig. B). This phenomenon is further described in Applicant's specification at *inter alia*, beginning page 30, line 3. The result of this error is that photographic images captured with the device of Fig. B will be out of focus.

Fig. C shows a non-limiting feature of the claimed invention, namely, at close range, when the user focuses the observation optical system to suit his or her individual dioptric power (resulting in the viewed image being focused on a plane that is toward the image side of the reticle), the image obtained through the photographing optical system will be focused on the plane of the CCD (contrary to the device of Fig. B, in which the image will be focused beyond the plane of the CCD). This advantage is due to the design of the cam groove 75 of Fig. 13 (shown in Fig. C), which counteracts a user's "instrument myopia" by causing the photographing optical system to be positioned closer to the object side than at the theoretical position (shown in Fig. C in hatched lines).

Thus, Applicants assert that all claimed subject matter is clearly described in the specification in such a way as to reasonably convey to one skilled in the art that Applicants had possession of the claimed invention at the time the application was filed, and respectfully request that the Examiner withdraw this rejection.

Applicants further note that in the outstanding Final Official Action the Examiner objected to the drawings, requiring that they show the focusing of light to define the theoretical position; however, in view of the above, it is submitted that the drawings indeed show every feature of the claimed invention.

Dependent Claims 2-8

The Examiner noted that dependent claims 2-8 inherit the deficiencies of claim 1, from which these claims depend; however, in view of the above arguments with respect

to claim 1, it is respectfully submitted that these dependent claims are also patentable under at least 35 U.S.C. § 112, first paragraph.

(A) The rejection of claims 1-8 under 35 U.S.C. § 103(a) as being unpatentable over YAMAZAKI in view of KOBAYASHI is in error, the decision to reject these claims on this ground should be reversed, and the application should be remanded to the Examiner for allowance.

Independent Claim 1

With respect to claim 1 (the only pending independent claim), the Examiner has asserted that YAMAZAKI teaches all of the claimed limitations except that YAMAZAKI “lacks specific reference to the dioptric power difference between the eye and the ocular lens system and the objective lens system and the observation optical system being cancelled,” but has found that KOBAYASHI teaches such a limitation, and concluded that it would have been obvious to combine the device of KOBAYASHI with the system of YAMAZAKI.

Applicants respectfully traverse the Examiner’s rejection, and expressly incorporate herein the arguments proffered in Applicants’ previous responses. Initially, Applicants note that (as proffered in Applicants’ previous responses) YAMAZAKI fails to teach or suggest the claimed reticle; rather, the “reticle” 11 of YAMAZAKI identified by the Examiner is merely the objective lens system. Applicants further note that KOBAYASHI also fails to disclose such a reticle. Rather, KOBAYASHI discloses a viewfinder of a camera, and does not operate in association with the photographic optical system. KOBAYASHI merely discloses that the diopter is set to a constant minus value regardless of the object distance, so that the image viewed through the

viewfinder remains in focus to the user when the finder is moved between short and far distances. In the Examiner's "Response to Arguments" section of the outstanding Final Official Action, the Examiner asserted KOBAYASHI teaches (at the "ADVANTAGE" section of the Abstract thereof) that "correction can be made for both far and close-range view;" however, such teaching does not suggest positioning the photographing optical system at an object side when an object contained in the close-range view is observed.

Thus, KOBAYASHI does not suggest at least that the second focusing mechanism being constructed in such a manner that, when an object contained in said close-range view is observed, the photographing optical system is positioned at an object side, in relation to a theoretical position determined when the photographing optical system focuses on an object, when said observation optical system focuses on the object, wherein a measured dioptric power difference between a first dioptric power of a combination of an eye of the user and an ocular lens system of said observation optical system, focusing on said reticle, and a second dioptric power of a combination of the eye and said ocular lens system and an objective lens system of said observation optical system, focusing on an object to be observed, is cancelled, as claimed in claim 1.

In the Examiner's "Response to Arguments" section of the outstanding Final Official Action, the Examiner also asserted that the use of a reticle is extremely well known in the art and one of ordinary skill in the art would incorporate a reticle for the purposes discussed in the rejection above." However, the Examiner has provided no support whatsoever for such an assertion. Further, since there is no reticle recited by

YAMAZAKI or KOBAYASHI, neither of these references, either alone or together in any proper combination, teaches or suggests the limitation “a measured dioptric power difference between a first dioptric power of a combination of an eye of the user and an ocular lens system of said observation optical system, focusing on said reticle, and a second dioptric power of a combination of the eye and said ocular lens system and an objective lens system of said observation optical system, focusing on an object to be observed, is cancelled.” (emphasis added). Applicants thus respectfully request that the Examiner provide support for such an assertion by providing, e.g., a reference, should the Examiner maintain such rejection.

Thus, contrary to the Examiner's determination, YAMAZAKI and KOBAYASHI, in any proper combination, do not include all of the structural or functional limitations of the claimed invention, and neither teaches or suggests the present claimed invention.

Dependent Claim 2

With respect to the Examiner's rejection of dependent claim 2, since this claim is dependent from allowable independent claim 1, which is allowable for at least the reasons discussed *supra*, this dependent claim is also allowable for at least these reasons. Further, Applicants submit that the applied references fail to teach or suggest at least wherein the measured dioptric power difference is obtained as an arithmetic mean of measured dioptric power differences obtained from experiments conducted on a plurality of observers, as generally recited in claim 2. Additionally, as discussed *supra*, Applicants conducted a focusing test to determine where an observer's eyes focus in comparison to the in-focus position of the test binoculars, and it was unexpectedly determined that the “observer's eyes focus on the object image at a

position slightly offset from the in-focus position.” Such test results allowed the inventors to obtain the arithmetic mean of the measured dioptric differences. As such, Applicants traverse the Examiner’s Official Notice, and respectfully request that the Examiner provide support for such an assertion by providing, e.g., a reference, should the Examiner maintain such rejection.

Dependent Claim 3

With respect to the Examiner’s rejection of dependent claim 3, since this claim is dependent from allowable independent claim 1, which is allowable for at least the reasons discussed *supra*, this dependent claim is also allowable for at least these reasons. Further, Applicants submit that the applied references fail to teach or suggest at least that the association mechanism comprises a rotary wheel member having a manually operated rotary wheel; the observation optical system comprises two optical system elements that are movable along the optical axis of the observation optical system to focus the observation optical system; the first focusing mechanism forms a first movement-conversion mechanism for converting a rotational movement the rotary wheel member into a relative back-and-forth movement of the two optical system elements; the photographing optical system is movable relative to an imaging plane along the optical axis of the photographing optical system to focus the photographing optical system; and the second focusing mechanism forms a second movement-conversion mechanism for converting a rotational movement of the rotary wheel member into a back-and-forth movement of the photographing optical system elements relative to the imaging plane, as generally recited in claim 3.

Dependent Claim 4

With respect to the Examiner's rejection of dependent claim 4, since this claim is dependent from allowable independent claim 1, which is allowable for at least the reasons discussed *supra*, this dependent claim is also allowable for at least these reasons. Further, Applicants submit that the applied references fail to teach or suggest at least wherein the rotary wheel member comprises a rotary wheel cylinder in which a lens barrel is housed so as to be movable along the central axis of the rotary wheel cylinder; the photographing optical system is housed in the lens barrel; the second movement-conversion mechanism comprises a first cam groove formed in one of the rotary wheel cylinder and the lens barrel, and a first cam follower formed in the other of the rotary wheel cylinder and the lens barrel; and the first cam groove is formed in such a manner that a rotational movement of the rotary wheel cylinder is converted into a back-and-forth movement of the lens barrel along the central axis of the rotary wheel cylinder, and the measured dioptric power difference is cancelled, as generally recited in claim 4.

Dependent Claim 5

With respect to the Examiner's rejection of dependent claim 5, since this claim is dependent from allowable independent claim 1, which is allowable for at least the reasons discussed *supra*, this dependent claim is also allowable for at least these reasons. Further, Applicants submit that the applied references fail to teach or suggest at least wherein the first movement-conversion mechanism comprises a second cam

groove formed on an outer surface of the rotary wheel cylinder, an annular member that has a second cam follower engaged with the first cam groove and that is attached on an outer surface of the rotary wheel cylinder to move along the central axis of the rotary wheel cylinder, and a movement transmission mechanism that transmits the movement of the annular member to one of the two optical system elements of the observation optical system, as generally recited in claim 5.

Dependent Claim 6

With respect to the Examiner's rejection of dependent claim 6, since this claim is dependent from allowable independent claim 1, which is allowable for at least the reasons discussed *supra*, this dependent claim is also allowable for at least these reasons. Further, Applicants submit that the applied references fail to teach or suggest at least wherein the observation optical system forms a pair, so that the observation optical device functions as a binocular telescope with a photographing function, as generally recited in claim 6.

Dependent Claim 7

With respect to the Examiner's rejection of dependent claim 7, since this claim is dependent from allowable independent claim 1, which is allowable for at least the reasons discussed *supra*, this dependent claim is also allowable for at least these reasons. Further, Applicants submit that the applied references fail to teach or suggest at least wherein the pair of observation optical systems are mounted on an optical system mount plate that comprises first and second plates that are movable relative to

each other, one of the pair of observation optical systems is placed on the first plate, and the other of the pair of observation optical systems is placed on the second plate, so that the distance between the optical axes of the pair of observation optical systems is adjusted by changing the relative positions of the first and second plates, as generally recited in claim 7.

Dependent Claim 8

With respect to the Examiner's rejection of dependent claim 8, since this claim is dependent from allowable independent claim 1, which is allowable for at least the reasons discussed *supra*, this dependent claim is also allowable for at least these reasons. Further, Applicants submit that the applied references fail to teach or suggest at least wherein the first and second plates are linearly moved relative to each other, so that the optical axes of the pair of observation optical systems are moved in a predetermined plane, whereby the distance between the optical axes of the pair of observation optical systems is changed, as generally recited in claim 8.

CONCLUSION

Claims 1-8 are patentable at least under 35 U.S.C. § 112, first paragraph, and under 35 U.S.C. § 103 over any proper combination of the teachings of YAMAZAKI in view of KOBAYASHI. Specifically, the applied art of record fails to teach or suggest the unique combination of features recited in Applicants' claims 1-8 for at least the reasons noted *supra*. Accordingly, Applicants respectfully request that the Board reverse the decision of the Examiner to reject claims 1-8 and remand the application to the Examiner for withdrawal of the rejections.

Thus, Applicants respectfully submit that each and every pending claim of the present application meets the requirements for patentability under at least 35 U.S.C. §§ 112 and 103, and that the present application and each pending claim are allowable over the prior art of record.

If there should be any questions about this application, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,
Masami SHIRAI et al.

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Attachments: Claims Appendix
Evidence Appendix
Related Proceedings Appendix
Attachment 1

CLAIMS APPENDIX

1. An observation optical device with a photographing function, having an observation optical system and a photographing optical system, said observation optical system being utilized as a focusing device for said photographing optical system, said observation optical device comprising:

a first focusing mechanism that focuses said observation optical system so as to observe a close-range view through said observation optical system;

a second focusing mechanism that focuses said photographing optical system so as to photograph a close-range view through said photographing optical system;

an association mechanism that associates said first and second focusing mechanisms with each other in such a manner that said observation optical system and said photographing optical system are always kept in a focused state; and

a reticle provided in said observation optical system for focusing said observation optical system with a predetermined dioptric power during an operation of said association mechanism;

said second focusing mechanism being constructed in such a manner that, when an object contained in said close-range view is observed, the photographing optical system is positioned at an object side, in relation to a theoretical position determined when the photographing optical system focuses on an object, when said observation optical system focuses on the object, wherein:

a measured dioptric power difference between a first dioptric power of a combination of an eye of the user and an ocular lens system of said observation optical system, focusing on said reticle, and a second dioptric power of a combination of the eye and

said ocular lens system and an objective lens system of said observation optical system, focusing on an object to be observed, is cancelled; and

the theoretical position is defined as a position of said photographic optical system such that, when an image observed through said observation optical system is focused on said reticle, the image obtained by said photographic optical system is also focused.

2. An observation optical device according to claim 1, wherein said measured dioptric power difference is obtained as an arithmetic mean of measured dioptric power differences obtained from experiments conducted on a plurality of observers.

3. An observation optical device according to claim 1, wherein said association mechanism comprises a rotary wheel member having a manually operated rotary wheel; said observation optical system comprises two optical system elements that are movable along the optical axis of said observation optical system to focus said observation optical system; said first focusing mechanism forms a first movement-conversion mechanism for converting a rotational movement said rotary wheel member into a relative back-and-forth movement of said two optical system elements; said photographing optical system is movable relative to an imaging plane along the optical axis of said photographing optical system to focus said photographing optical system; and said second focusing mechanism forms a second movement-conversion mechanism for converting a rotational movement of said rotary wheel member into a back-and-forth movement of said photographing optical system elements relative to said imaging plane.

4. An observation optical device according to claim 3, wherein said rotary wheel member comprises a rotary wheel cylinder in which a lens barrel is housed so as to be movable along the central axis of said rotary wheel cylinder; said photographing optical system is housed in said lens barrel; said second movement-conversion mechanism comprises a first cam groove formed in one of said rotary wheel cylinder and said lens barrel, and a first cam follower formed in the other of said rotary wheel cylinder and said lens barrel; and said first cam groove is formed in such a manner that a rotational movement of said rotary wheel cylinder is converted into a back-and-forth movement of said lens barrel along the central axis of said rotary wheel cylinder, and said measured dioptric power difference is cancelled.

5. An observation optical device according to claim 4, wherein said first movement-conversion mechanism comprises a second cam groove formed on an outer surface of said rotary wheel cylinder, an annular member that has a second cam follower engaged with said first cam groove and that is attached on an outer surface of said rotary wheel cylinder to move along the central axis of said rotary wheel cylinder, and a movement transmission mechanism that transmits the movement of said annular member to one of said two optical system elements of said observation optical system.

6. An observation optical device according to claim 3, wherein said observation optical system forms a pair, so that said observation optical device functions as a binocular telescope with a photographing function.

7. An observation optical device according to claim 6, wherein said pair of observation optical systems are mounted on an optical system mount plate that comprises first and second plates that are movable relative to each other, one of said

pair of observation optical systems is placed on said first plate, and the other of said pair of observation optical systems is placed on said second plate, so that the distance between the optical axes of said pair of observation optical systems is adjusted by changing the relative positions of said first and second plates.

8. An observation optical device according to claim 7, wherein said first and second plates are linearly moved relative to each other, so that the optical axes of said pair of observation optical systems are moved in a predetermined plane, whereby the distance between the optical axes of said pair of observation optical systems is changed.

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EVIDENCE APPENDIX

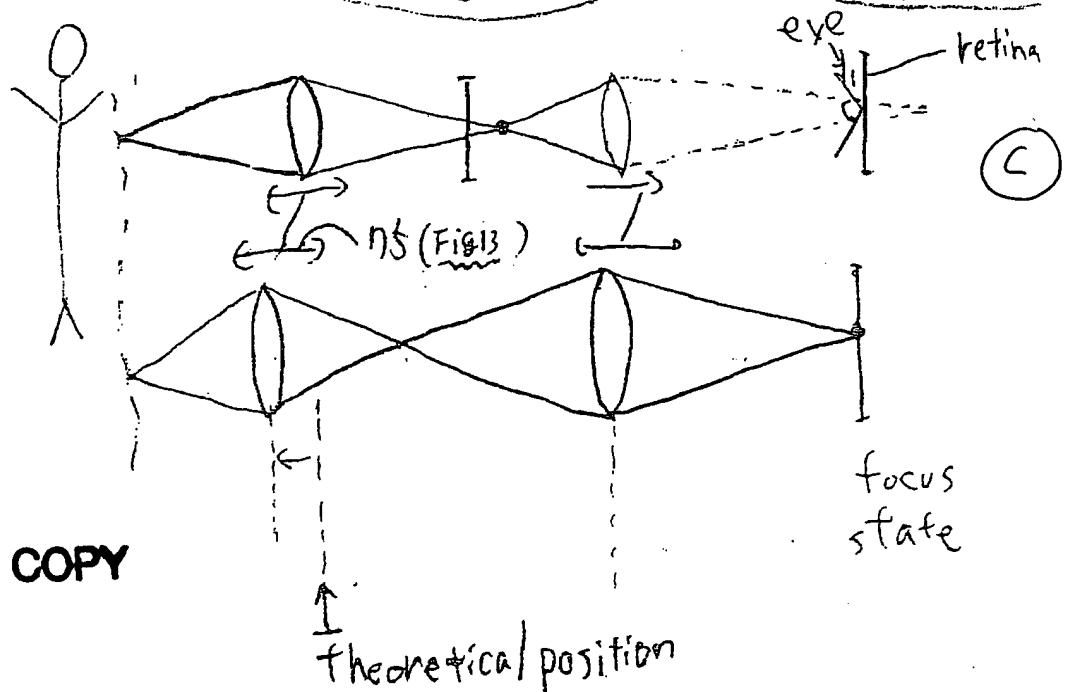
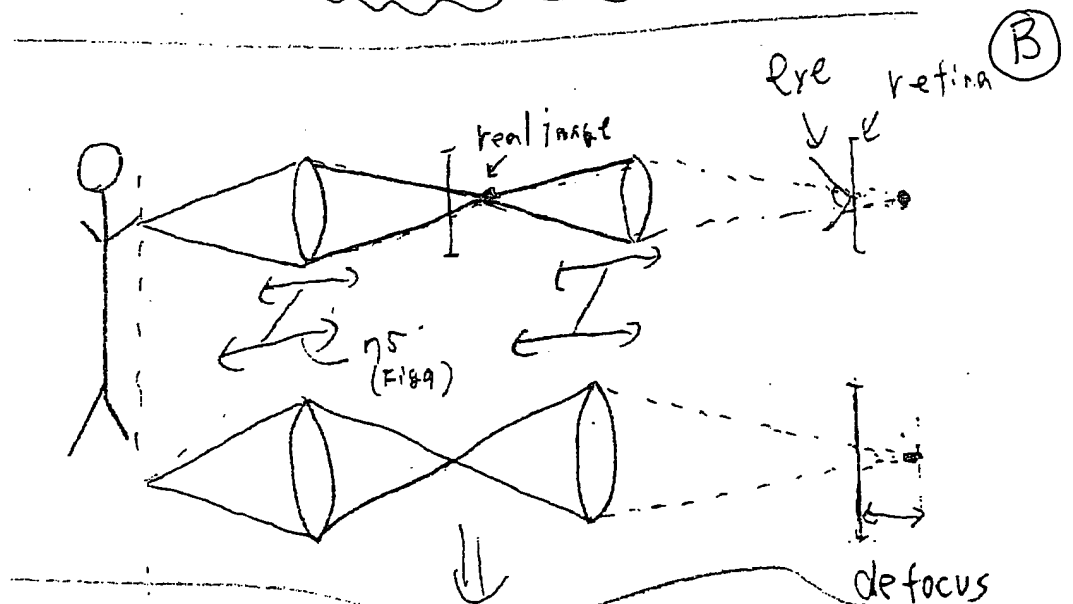
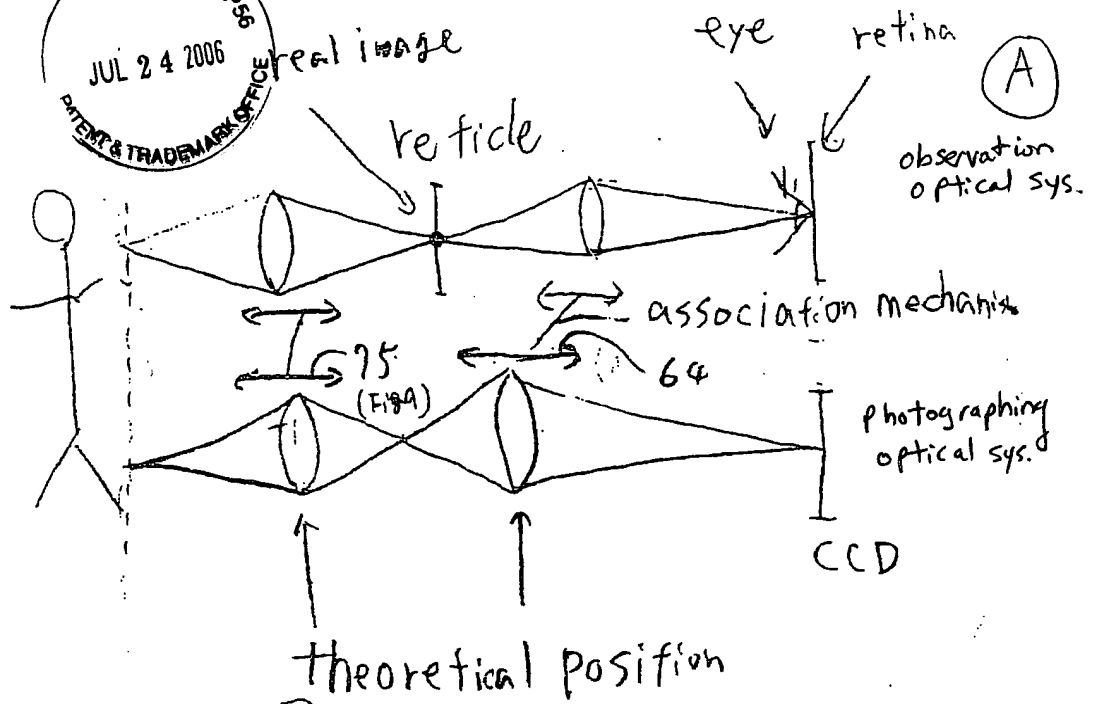
NONE

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RELATED PROCEEDINGS APPENDIX

NONE

ATTACHMENT 1



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